

IN THE CLAIMS:

- 1 1. (CURRENTLY AMENDED) A method for selecting a coprocessor from a plurality
2 of coprocessors to process a packet, the method comprising the steps of:
3 determining a size of the packet;
4 determining a cost associated with the packet in response to the size of the packet,
5 the cost representing a load associated with processing the packet;
6 determining an anticipated load for each coprocessor in the plurality of coproces-
7 sors using the cost; and
8 selecting the coprocessor from the plurality of coprocessors based on the antici-
9 pated load.

- 1 2. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the step of determin-
2 ing a cost further comprises the step of:
3 calculating the cost using a rate associated with processing the packet.

- 1 3. (ORIGINAL) The method of claim 2 wherein the rate is stored in a lookup table.

- 1 4. (ORIGINAL) The method of claim 2 wherein the step of calculating the cost further
2 comprising the step of:
3 dividing the packet's size by the rate.

- 1 5. (PREVIOUSLY PRESENTED) The method of claim 2 wherein the step of calculat-
2 ing the cost further comprises the step of:

3 multiplying the packet's size by a multiplicative inverse of the rate.

1 6. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the step of determin-
2 ing a cost further comprises the step of:

3 applying the packet's size to a lookup table containing one or more cost values to
4 determine the cost.

1 7. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the step of determin-
2 ing an anticipated load further comprises the step of:

3 adding the cost to a cumulative load associated with each coprocessor in the plu-
4 rality of coprocessors.

1 8. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the step of selecting
2 the coprocessor further comprises the step of:

3 selecting the coprocessor from a group of one or more coprocessors whose anti-
4 cipated load is a minimum load.

1 9. (ORIGINAL) The method of claim 8 wherein the coprocessor is selected using a
2 scheduling algorithm.

1 10. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the step of selecting
2 the coprocessor further comprises the step of:

3 determining if a port associated with the packet is congested.

1 11. (PREVIOUSLY PRESENTED) The method of claim 10 wherein the step of select-
2 ing the coprocessor further comprises the step of:
3 selecting the coprocessor from a group of one or more coprocessors whose antici-
4 pated load is not a minimum load.

1 12. (PREVIOUSLY PRESENTED) The method of claim 10 wherein the step of select-
2 ing the coprocessor further comprises the step of:
3 selecting the coprocessor from a group of one or more coprocessors whose antici-
4 pated load is a minimum load.

1 13. (ORIGINAL) The method of claim 1 further comprising the step of:
2 incrementing a cumulative load associated with the selected coprocessor.

1 14. (PREVIOUSLY PRESENTED) The method of claim 13 wherein the step of incre-
2 menting a cumulative load further comprises the step of:
3 adding the cost to the cumulative load.

1 15. (ORIGINAL) The method of claim 1 further comprising the step of:
2 decrementing a cumulative load associated with the selected coprocessor.

1 16. (PREVIOUSLY PRESENTED) The method of claim 15 wherein the step of decre-
2 menting a cumulative load further comprises the step of:
3 subtracting the cost from the cumulative load.

- 1 17. (PREVIOUSLY PRESENTED) An apparatus for selecting a coprocessor from a
2 plurality of coprocessors to process a packet, the apparatus comprising:
3 a memory containing one or more software routines, including a software routine
4 configured to determine a size of the packet, and to determine a cost associated with the
5 packet in response to the size of the packet, the cost representing a load associated with
6 processing the packet; and
7 a processor configured to execute the software routines to determine an anti-
8 cipated load for each coprocessor in the plurality of coprocessors using the cost and to se-
9 lect the coprocessor from the plurality of coprocessors based on the anticipated load.
- 1 18. (ORIGINAL) The apparatus of claim 17 further comprising:
2 a data structure;
3 wherein the cost is determined using information contained in the data structure.
- 1 19. (ORIGINAL) The apparatus of claim 18 wherein the information contained in the
2 data structure includes the cost.
- 1 20. (ORIGINAL) The apparatus of claim 18 wherein the information contained in the
2 data structure includes a rate the coprocessor can process the packet.
- 1 21. (PREVIOUSLY PRESENTED) An intermediate device configured to select a co-
2 processor from a plurality of coprocessors to process a packet, the intermediate device
3 comprising:

- 4 means for determining a size of the packet, and for determining a cost associated
5 with the packet in response to the size of the packet, the cost representing a load associ-
6 ated with processing the packet;
7 means for determining an anticipated load for each coprocessor in the plurality of
8 coprocessors using the cost; and
9 means for selecting the coprocessor based on the anticipated load.

- 1 22. (PREVIOUSLY PRESENTED) A computer readable media comprising computer
2 executable instructions for execution in a processor for selecting a coprocessor from a
3 plurality of coprocessors to process a packet, the instructions for:
4 determining a size of the packet, and determining a cost associated with the
5 packet in response to the size of the packet, the cost representing a load associated with
6 processing the packet;
7 determining an anticipated load for each coprocessor in the plurality of coproces-
8 sors using the cost; and
9 selecting the coprocessor from the plurality of coprocessors based on the antici-
10 pated load.

- 1 23. (CURRENTLY AMENDED) A method for selecting a processor for processing a
2 packet, the method comprising ~~the steps of~~:
3 determining a size of the packet;
4 determining a cost associated with the packet of that size, the cost representing a
5 load associated with processing the packet;
6 determining an anticipated load for the processor using the cost of the packet if
7 processed by the processor;; and
8 selecting the processor based on the anticipated load.

1 24. (CURRENTLY AMENDED) The method of claim 23 wherein the step of determin-
2 ing a cost comprises: the step of:
3 calculating the cost using a rate associated with processing of the packet; and
4 wherein the rate is stored in a lookup table.

1 25. (PREVIOUSLY PRESENTED) The method of claim 23 wherein the step of deter-
2 mining a cost further comprises the step of:
3 applying the size of the packet to a lookup table containing cost values associated
4 with particular sizes.

1 26. (PREVIOUSLY PRESENTED) A method for selecting a coprocessor from a plural-
2 ity of coprocessors to perform a processing operation on a received packet, the method
3 comprising steps of:
4 determining a cumulative load for each coprocessor, the cumulative load repre-
5 senting load due to packets currently awaiting processing at that coprocessor;
6 determining a size of the received packet;
7 determining a cost for processing the received packet at each coprocessor, the cost
8 determined, at least in part, in response to the size of the received packet and a processing
9 rate of that coprocessor;
10 combining the cumulative load and the cost at each coprocessor, to create an an-
11 ticipated load for each coprocessor;
12 comparing the anticipated loads of all the coprocessors; and
13 selecting, in response to the comparing, a particular coprocessor of the plurality of
14 coprocessors to perform the processing operation on the received packet.

1 27. (PREVIOUSLY PRESENTED) The method of claim 26, wherein the step of select-
2 ing further comprises the step of:
3 selecting a coprocessor with minimum anticipated load to perform the processing
4 operation on the received packet.

1 28. (PREVIOUSLY PRESENTED) The method of claim 26, further comprising the step
2 of:
3 determining if congestion is present at an output port associated with the received
4 packet, and if congestion is present, selecting a coprocessor with non-minimum antici-
5 pated load to perform the processing operation on the received packet.

1 29. (PREVIOUSLY PRESENTED) The method of claim 26, wherein the step of deter-
2 mining a cumulative load for each coprocessor further comprises the step of:
3 determining, for each coprocessor, sizes of the packets currently awaiting proc-
4 essing at that coprocessor and using the sizes in conjunction with the processing rate of
5 that coprocessor to determine the cumulative load.

1 30. (PREVIOUSLY PRESENTED) The method of claim 26 wherein the processing oper-
2 ation is an encryption operation.

1 31. (PREVIOUSLY PRESENTED) An apparatus to select a coprocessor from a plural-
2 ity of coprocessors to perform a processing operation on a received packet, the apparatus
3 comprising:

4 a plurality of queues configured to store packets currently awaiting processing,
5 each queue associated with one of the coprocessors, each queue associated with a cumu-
6 lative load that represents a load to process packets in that queue;

7 a data structure configured to store processing rates, each processing rate associ-
8 ated with one of the coprocessors; and

9 a processor configured to determine a size of the received packet, and in response
10 to the size of the received packet, and the processing rate of each coprocessor, determine
11 a cost to perform a processing operation on the received packet at each coprocessor, the
12 processor further configured to combine the cost at each coprocessor with the cumulative
13 load at that coprocessor to create an anticipated load at each coprocessor, and to select a
14 particular coprocessor to perform the processing operation on the received packet in re-
15 sponse to comparison of the anticipated load at each coprocessor.

1 32. (PREVIOUSLY PRESENTED) The apparatus of claim 31, wherein the processor is
2 further configured to select a coprocessor with minimum anticipated load to perform the
3 processing operation on the received packet.

1 33. (PREVIOUSLY PRESENTED) The apparatus of claim 31, wherein the processor is
2 further configured to determine if congestion is present at an output port associated with
3 the received packet, and if congestion is present, select a coprocessor with non-minimum
4 anticipated load to perform the processing operation on the received packet.

1 34. (PREVIOUSLY PRESENTED) The apparatus of claim 31, wherein the cumulative
2 load associated with each coprocessor is determined in response to sizes of packets
3 awaiting processing in the queue associated with that coprocessor and the processing rate
4 of that coprocessor.

- 1 35. (PREVIOUSLY PRESENTED) The apparatus of claim 31, wherein the processing
2 operation is an encryption operation.